Maldives National Skills Development Authority

National Competency Standard for Computer-Aided Ship Designing

Standard Code: ICT-06L4-V1-24

Qualification Name: National Certificate IV in Computer-Aided Ship Designing

FOREWORD

The pivotal role of the Maldives National Skills Development Authority (MNSDA) in meticulously implementing and expanding Technical and Vocational Education & Training (TVET) exemplifies the steadfast commitment of the Maldives to build a skilled and resilient workforce. This commitment is evident from the strategic formulation of National Standards and the establishment of a comprehensive framework for training and certification.

Under the Higher Education and Training Act 7/2021, the MNSDA assumes an instrumental role, reflecting the government's unwavering dedication to streamlining TVET policies and procedures. This includes the establishment of a robust system for accrediting and registering both Institution Based Training (IBT) and Employer Based Training (EBT) providers. The MNSDA's active involvement in conducting the National Apprenticeship Program (NAP), National Trade Testing and Certification (NTTC), and the issuance of National Certificates reflects a comprehensive approach to ensure elevated quality standards and competency within the workforce.

The National Competency Standards (NCS) revised through the Maldives Enhancing Employability and Resilience of Youth (MEERY) project accentuates the commitment to updating and sustaining contemporary skill sets aligned precisely with industry demands. Deliberate efforts to revise existing NCS, coupled with the development of curriculum, teaching materials, resource books, and logbooks, attest to our dedication to ensuring the ongoing relevance and currency of the TVET system in the Maldives.

The active engagement of Technical Panels and Employment Sector Councils in the NCS development and approval process, coupled with alignment to the Maldives National Qualification Framework (MNQF) and accreditation by the Maldives Qualifications Authority (MQA), certifies that the TVET system not only remains highly responsive but also ensures the quality standards demanded by industries. This approach enables the system to effectively meet the diverse needs of industries and adapt to the evolving economic landscape.

The collaborative development of the National Certificate IV in Computer-aided Ship Designing by the MNSDA, MEERY, and Villa College exemplifies the practical implementation of TVET initiatives. This training package represents a critical stride towards addressing the requisite skills while fostering opportunities to integrate sustainable economic development within the TVET framework.

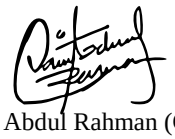
Dr. Zahra Mohamed

Chief Executive Officer

Maldives National Skills Development Authority

EMPLOYMENT SECTOR COUNCILS			
#	Name	Designation	Organisation
01	Adam Iyaz	Director	Ministry of Homeland Security and Technology
02	Hussain Mohamed	IT Manager, IT Infrastructure	National Centre for Information Technology
03	Mariyam Asna Saeed	President	Women in Tech
04	Hassan Ali	Dep General Manager ICT	Maldives Water and Sewerage Company
05	Dr. Ali Fawaz Shareef	Deputy Vice Chancellor	Maldives National University
06	Naail Abdul Rahman	ICT Expert	-
07	Dr. Ibrahim Shiyam	ICT Consultant	-
08	Shakeeba Ali	Director General	Maldives National Skills Development Authority
09			

National Occupational Standard has been endorsed by:



Naail Abdul Rahman (Chair)

Chairperson

ICT Sector Council

Maldives National Skills Development Authority

Umar Zahir Office Building, 5th Floor,

Orchid Ma higun, HulhuMale' , Republic of Maldives.

Date of Endorsement: 31/12/2024	Date of Revision:

TECHNICAL SUPPORT			
#	Name	Designation	Organisation
01			
02			

TECHNICAL PANEL MEMBERS			
#	Name	Designation	Organisation
01	Ahmed Wajeeh	Industry Expert	-
02	Moahmed Yoosuf	Freelance lecturer	-
03	Naseef Mohamed	Marine Engineer	MGH Investment

VERSION	DEVELOPER	DATE	STANDARD CODE
V1	Villa College	9/10/2024	ICT-06L4-V1-24

Standard Development Process

The development of the "Certificate IV in Computer-aided Ship Designing" Standard involved a thorough study of the boat design and boat building practices in the Maldives as well as international standards used in drafting and design works related to vessels. The requirements of a designer for a boat maintenance work and new build works were researched within the boat building and repair companies. This draft will undergo further refinement through a Technical Panel (TP) from Maldivian workplaces, ensuring incorporation of competencies and edits. This panel will provide technical inputs and changes to this draft until a final standard is compiled.

Description of "Computer Aided Ship Designing"

Ship design is the process of creating engineering solutions for the requirements of the ship owner. There are almost no prototypes and the designer must get it right the first time. Hence the designer must approach the design of these complex floating structures in a methodical manner.

In the past, ship design was like a process of evolution and each ship was a modified version of an already existing ship. However, with the advancements in technology, ship design is now heavily dependent on the use of computer software and the designers and naval architects are free to design something very special and unique for each and every ship owner according to their requirements.

This certificate will serve as an entry point for anyone who is venturing to become a professional ship designer or a naval architect. This program will equip the participants with the fundamental skills that are needed to make accurate technical drawings for both new build projects as well as repair and refurbishment works. However, this program will not qualify someone to make full engineering designs for a new build project as a naval architect will be required to make those calculations and/or simulations.

Job opportunities upon completion of "National Certificate-IV in Computer aided Ship Design"

Upon successful completion of the National Certificate-IV in Computer aided Ship Design, students can work in the following jobs.

1. *Design assistant*
2. *Draftsman*
3. *Production Supervisor*

KEY FOR CODING

Coding Competency Standards and Related Materials

DESCRIPTION	REPRESENTED BY
Industry Sector as per ESC (Three letters)	Construction Sector (CON) Fisheries and Agriculture (FNA) Information, Communication and Technology (ICT) Transport Sector (TRN) Tourism Sector(TOU) Social Sector (SOC) Foundation (FOU)
Standard Number - Occupation with in an industry sector	Two digits 01-99
Common Competency	CM
Core Competency	CC
Unit Number - Occupation with in a Standard	Three digits 01-99
MNQF level of qualification	L1, L2, L3, L4 etc.
Version Number	V1, V2 etc.
Separator	-
Year of Last Review of standard, qualification	Two digits responding to the year of last review, example 23 for the year 2023
Qualification Code	Refers to Standard code in cover page

1. Endorsement Application for Qualification 01	
2. NATIONAL CERTIFICATE IV IN COMPUTER AIDED SHIP DESIGN.	
3. Qualification code: ICT-06L4-V1-24	**Total Number of Credits: 120**

4. Purpose of the qualification

The National Certificate IV in Computer Aided Ship Design, is a program that is dedicated for the ship building, ship reconditioning and ship repair/maintenance industry in the Maldives. This program will develop candidates with a foundational knowledge of the principles of design and drafting. They will also be trained to take measurements and complete engineering drawings with accuracy that is acceptable within general design standards. The participants should be able to aid with anything from drawings for a new build as well as a repair or maintenance work of a boat, under the supervision of a project leader (Naval Architect/ Engineer) with the help of different CAD tools for both 2D and 3D designs. This qualification will also instill professional workplace qualities such as customer service, working with a team, professional ethics, sustainable work practices, safety at the workplace and how to respond in emergency situations.

5. Regulations for the qualification	National Certificate III in the occupation of Waste Management will be awarded to those who are competent in units 1+2+3+4+5+6+7+8+9+10+11+12+13+14+15

6. Schedule of Units

Unit No.	Unit Title	Code
Common Competencies		
01	Sustainable work practices	ICT-06-CM01-V1-24
02	Customer service experience	ICT-06-CM02-V1-24
03	Leadership and working with people	ICT-06-CM03-V1-24
04	Diversity in the workplace and professional ethics	ICT-06-CM04-V1-24
05	Respond to emergency situations	ICT-06-CM05-V1-24
Core Competencies		
06	Basic Drafting Principles	ICT-06-CC01-V1-24
07	Engineering Drawing	ICT-06-CC02-V1-24
08	Introduction to AutoCAD	ICT-06-CC03-V1-24
09	Basic 3D shapes and terminologies	ICT-06-CC04-V1-24
10	Introduction to Naval Architecture	ICT-06-CC05-V1-24
11	Preparing Technical Drawings for Ship Building	ICT-06-CC06-V1-24
12	Ship Electrical and Electronics Drafting	ICT-06-CC07-V1-24
13	Ship Plumbing and Drainage Drafting	ICT-06-CC08-V1-24
14	Managing a Ship Design Project	ICT-06-CC09-V1-24

7. Accreditation requirements	The training provider should have a workshop or similar training facility to provide the trainees the hands-on experience related to this qualification and arrangements for relevant industrial experience.
8. Recommended sequencing of units	As appearing under the section 06

Unit Details

Unit No.	Unit Title	Code	Level	No. of credits	Credit hours	Contact hours
01	Sustainable work practices	ICT-06-CM01-V1-24	IV	04	40	20
02	Customer service experience	ICT-06-CM02-V1-24	IV	04	40	20
03	Leadership and working with people	ICT-06-CM03-V1-24	IV	04	40	20
04	Diversity in the workplace and professional ethics	ICT-06-CM04-V1-24	IV	04	40	20
05	Respond to emergency situations	ICT-06-CM05-V1-24	IV	04	40	20
06	Basic Drafting principles	ICT-06-CC01-V1-24	IV	10	100	50
07	Engineering Drawing	ICT-06-CC02-V1-24	IV	10	100	50
08	Introduction to AutoCAD	ICT-06-CC03-V1-24	IV	10	100	50
09	Basic 3D shapes and terminologies	ICT-06-CC04-V1-24	IV	10	100	50
10	Introduction to Naval Architecture	ICT-06-CC05-V1-24	IV	10	100	50
11	Preparing Technical Drawings for Ship Building	ICT-06-CC06-V1-24	IV	10	100	50
12	Ship Electrical and Electronics Drafting	ICT-06-CC07-V1-24	IV	10	100	50
13	Ship Plumbing and Drainage Drafting	ICT-06-CC08-V1-24	IV	10	100	50
14	Managing a Ship Design Project	ICT-06-CC09-V1-24	IV	20	200	100
Total				120	1200	600

Packaging of National Qualifications:

National certificate III in Waste Management will be awarded to those who are competent in units 1+2+3+4+5+6+7+8+9+10+11+12+13+14+15+16+17+18

Qualification Code: ICT-06L4-V1-24

COMPETENCY BASED ASSESSMENT

The final assessment of the National Competency-Based Programmes conducted by the Maldives National Skills Development Authority (MNSDA) is a competency-based assessment.

The Competency-Based Assessment ensures that the students' performance meets the requirements specified in the National Competency Standards (NCS). This assessment approach is designed to verify that graduates are job-ready and meet established occupational competency requirements within their respective fields.

Eligibility for Final Assessment

To be eligible for the final Competency-Based Assessment, students must fulfil the following conditions:

- achieve a **minimum of 80%** attendance
- deemed competent in each of the units of the programme in the pre-assessment

Competency-Based Assessment Process

Upon submission of the Pre-assessment report by the training provider, MNSDA will check for all the necessary supporting documents and conduct Competency-Based Assessment through a National Assessor registered with MNSDA. It is important to note that any trainer involved in the training process is **not permitted** to conduct the assessment to maintain impartiality and integrity of the process.

The final Competency-Based Assessment conducted by MNSDA includes both:

- **Theory**: Evaluating students' knowledge and understanding of key theoretical aspects of the competency.
- **Practical:** Assessing hands-on skills and application of knowledge in real-world or simulated environments.

Once the assessment is completed, the National Assessor will send the Competency-Based Assessment Report to MNSDA.

Competency Status Requirement

For certification to be granted, the student must be officially declared **"Competent"** in each of the units of the programme by the National Assessor.

Conclusion

Competency-Based Assessment is a critical component in ensuring the quality and credibility of technical and vocational skills-based training. By adhering to the outlined procedure, MNSDA upholds the standards required to certify students who are fully prepared to meet industry demands.